

WHAT IS CLAIMED IS:

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1. A phase change ink composition comprising:
a urethane that is the reaction product of one or more alcohols and one or more
isocyanates, the alcohols comprising monohydric fused-ring alcohols; and
at least one polyethylene wax.
2. The phase change ink composition of claim 1 wherein the isocyanates
comprise isophorone diisocyanate.
- 10 3. The phase change ink composition of claim 1 wherein the monohydric fused-
ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated
rosin, and decarboxylated rosin.
- 15 4. The phase change ink composition of claim 1 wherein the monohydric fused-
ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated
rosin, and decarboxylated rosin; and the isocyanates comprise isophorone diisocyanate.
- 20 5. The phase change ink composition of claim 1 wherein the alcohols consist of
one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated
rosin; and the isocyanates consist of isophorone diisocyanate.
- 25 6. A phase change ink composition comprising:
a urethane resin that is the reaction product of one or more alcohols and one or more
isocyanates, the alcohols comprising fused-ring alcohols which include at least three fused
rings.
- 30 7. The phase change ink composition of claim 6 wherein the fused-ring alcohols
consist of monohydric alcohols.

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8. The phase change ink composition of claim 6 wherein the fused-ring alcohols which include at least three fused rings consist of monohydric alcohols.

9. The phase change ink composition of claim 6 wherein the fused-ring alcohols 5 include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin.

10. The phase change ink composition of claim 6 wherein the fused-ring alcohols 10 include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates comprise isophorone diisocyanate.

11. The phase change ink composition of claim 6 wherein the alcohols consist of one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin; and decarboxylated rosin and the isocyanates consist of isophorone diisocyanate.

12. A phase change ink composition comprising:
a urethane resin that is the reaction product of one or more alcohols and one or more 15 isocyanates, the alcohols comprising monohydric fused-ring alcohols having no double bonds.

13. The phase change ink composition of claim 12 further comprising a 20 polyethylene wax.

14. The phase change ink composition of claim 12 further comprising a 25 polyethylene wax and a mono-amide.

15. The phase change ink composition of claim 12 wherein the monohydric fused-ring alcohols include alcohols having at least three fused rings.

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16. A phase change ink comprising:

a urethane that is the reaction product of one or more alcohols and one or more isocyanates, the alcohols comprising monohydric fused-ring alcohols;
at least one polyethylene wax; and
5 a colorant.

17. The phase change ink of claim 16 wherein the monohydric fused-ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin.

10 18. The phase change ink composition of claim 16 wherein the monohydric fused-ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates comprise isophorone diisocyanate.

15 19. The phase change ink composition of claim 16 wherein the alcohols consist of one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates consist of isophorone diisocyanate.

20 20. The phase change ink composition of claim 16 wherein the alcohols consist of one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates consist of isophorone diisocyanate; the ink further comprising a mono-amide.

21. A method for producing a layer of a phase change ink on a surface of a substrate, which comprises:

5 forming a phase change ink composition in the solid phase, the phase change ink composition comprising a phase change carrier composition and a colorant material; said phase change carrier composition comprising a urethane resin that is the reaction product of at least one fused ring alcohol and an isocyanate, the fused ring alcohol including at least three fused rings;

melting the ink;

10 applying the melted ink to at least one surface of a substrate; and solidifying the applied ink on the surface of the substrate.

22. The method of claim 21 wherein the fused-ring alcohols consist of monohydric alcohols.

15 23. The method of claim 21 wherein the fused-ring alcohols which include at least three fused rings consist of monohydric alcohols.

20 24. The method of claim 21 wherein the fused-ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin.

25 25. The method of claim 21 wherein the fused-ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates comprise isophorone diisocyanate.

26. The method of claim 21 wherein the alcohols consist of one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates consist of isophorone diisocyanate.

27. A method of forming a phase change ink, comprising reacting one or more 30 alcohols with one or more isocyanates, the alcohols comprising fused-ring alcohols which include at least three fused rings.

28. The method of claim 27 wherein the fused-ring alcohols consist of monohydric alcohols.

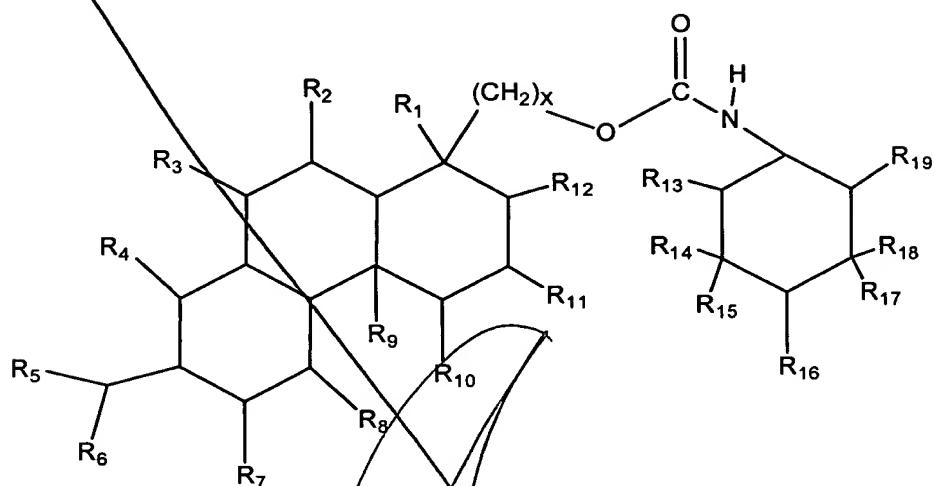
29. The method of claim 27 wherein the fused-ring alcohols which include at least
5 three fused rings consist of monohydric alcohols.

30. The method of claim 27 wherein the fused-ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin.

10 31. The method of claim 27 wherein the fused-ring alcohols include one or more of hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the isocyanates comprise isophorone diisocyanate.

32. The method of claim 27 wherein the alcohols consist of one or more of
15 hydroabietyl alcohol, methyl ester of hydrogenated rosin, and decarboxylated rosin; and the
isocyanates consist of isophorone diisocyanate.

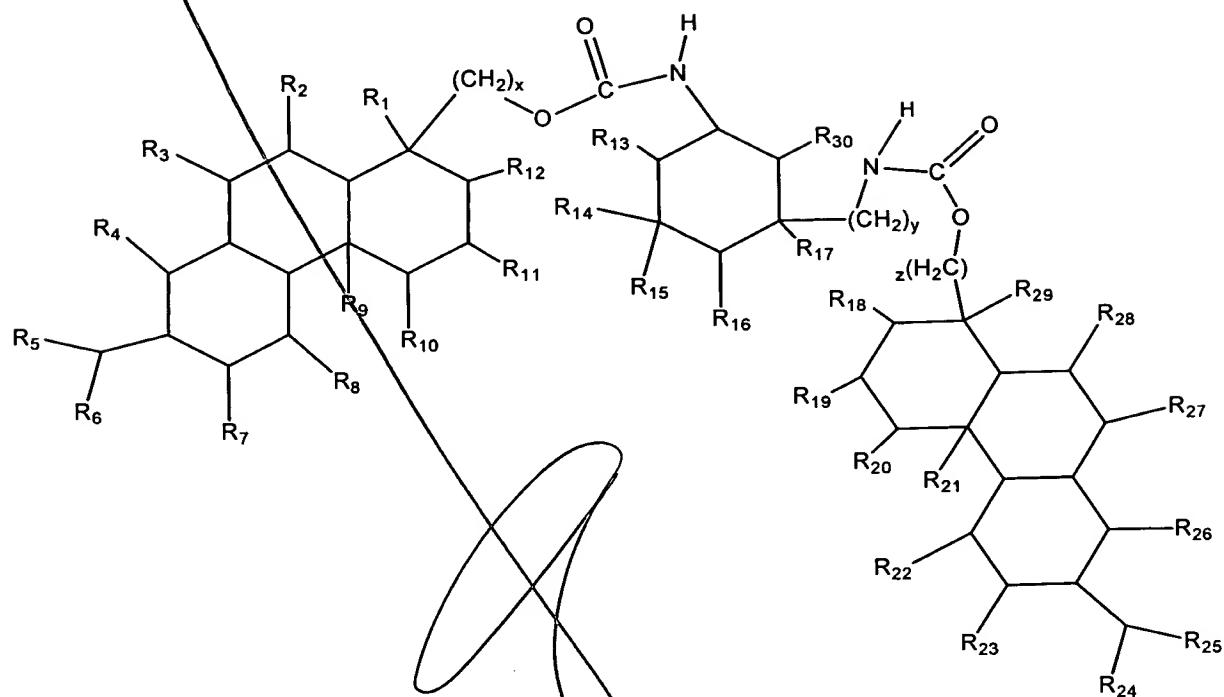
33. A composition comprising:



wherein R_1 - R_{19} comprise hydrogen, alkyl groups or aryl groups, and can be the same as one another or different from one another; wherein one or more of R_1 - R_{19} can be comprised by a ring structure; and wherein X_1 comprises one or more methylene groups.

34. The composition of claim 33 wherein some of R_1 - R_{19} are methyl groups and some of R_1 - R_{19} are not methyl groups, and wherein at least some of R_1 - R_{19} which are not methyl groups are hydrogen.

35. A composition comprising:

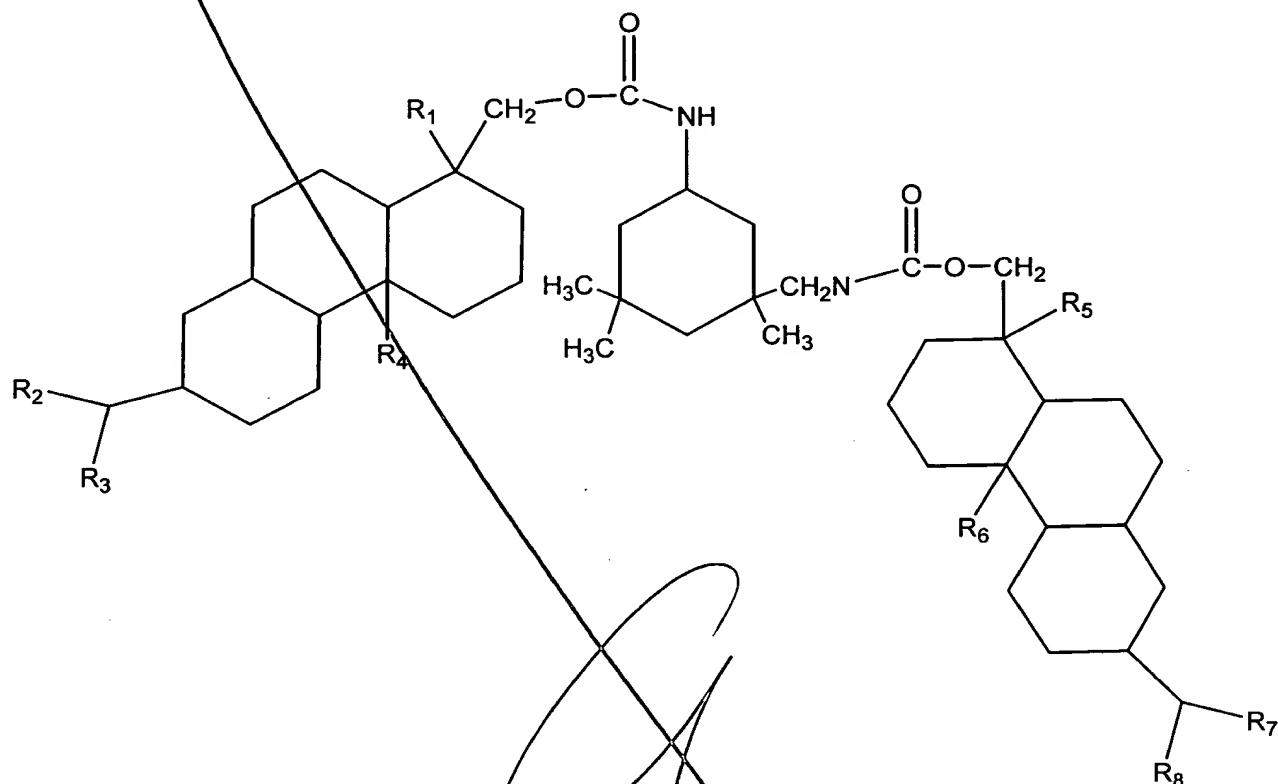


wherein R_1 - R_{30} comprise hydrogen, alkyl groups or aryl groups, and can be the same as one another or different from one another; and wherein X_1 , X_2 and X_3 comprise one or more methylene groups and can be the same as one another or different from one another.

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36. The composition of claim 35 wherein some of R_1 - R_{30} are methyl groups and some of R_1 - R_{30} are not methyl groups, and wherein at least some of the R_1 - R_{30} which are not methyl groups are hydrogen.

37. A composition comprising:



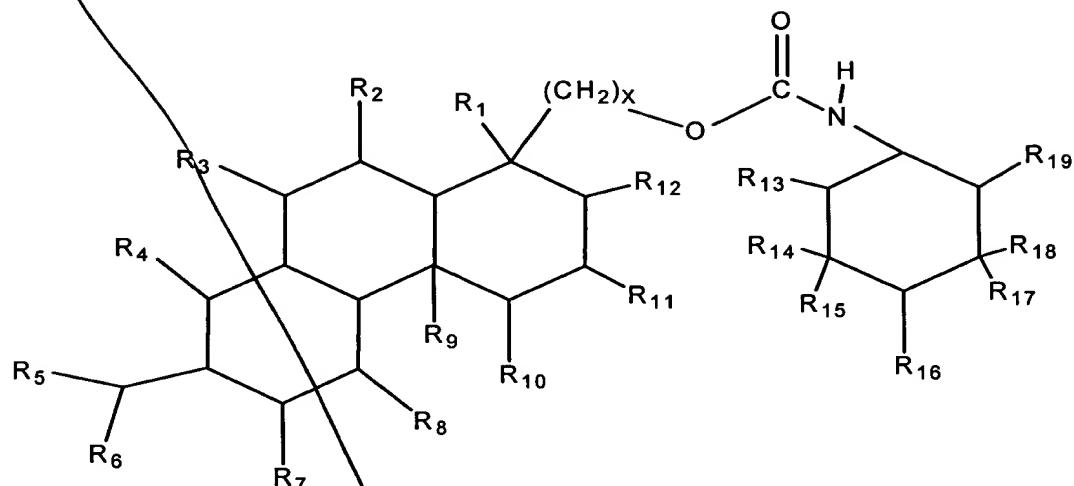
wherein R_1 , R_2 , R_3 , R_4 , R_5 , R_6 , R_7 and R_8 comprise hydrogen, alkyl groups or aryl groups.

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38. The composition of claim 37 wherein R_1 , R_2 , R_3 , R_4 , R_5 , R_6 , R_7 and R_8 are methyl groups.

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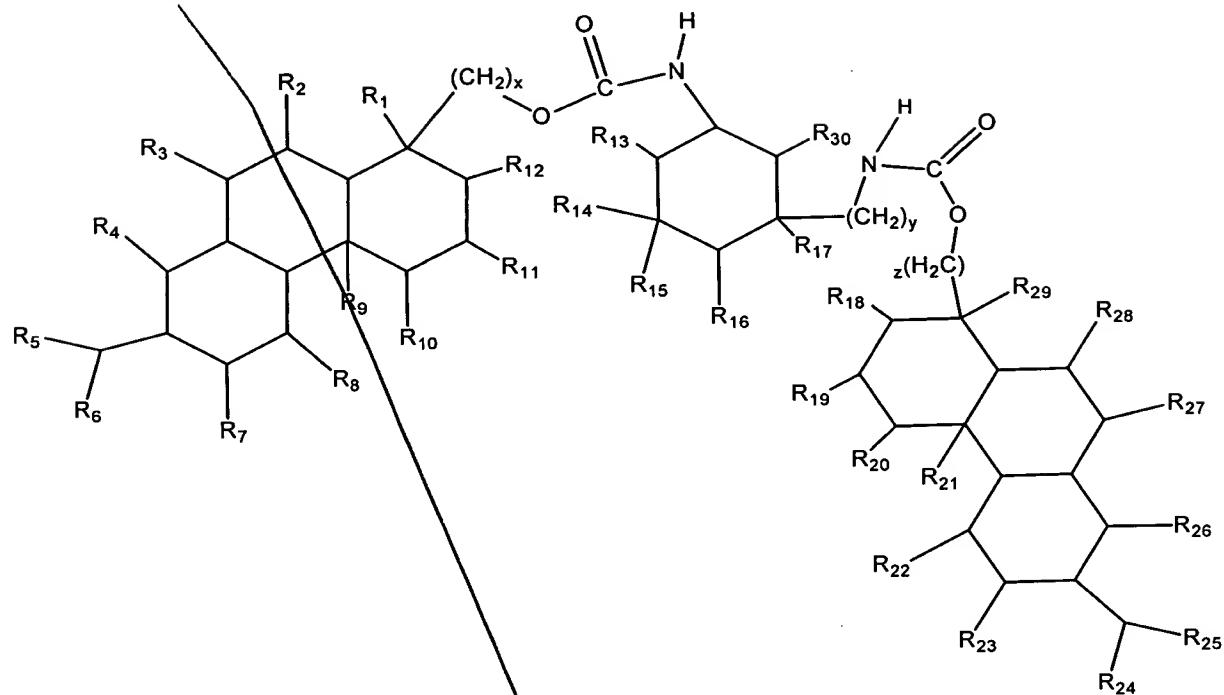
39. A phase change ink comprising:



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wherein R₁-R₁₉ comprise hydrogen, alkyl groups or aryl groups, and can be the same as one another or different from one another, wherein one or more of R₁-R₁₉ can be comprised by a ring structure; and wherein X₁ comprises one or more methylene groups.

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40. The phase change ink of claim 39 wherein some of R₁-R₃₀ are methyl groups and some of R₁-R₃₀ are not methyl groups, and wherein at least some of the R₁-R₃₀ which are not methyl groups are hydrogen.

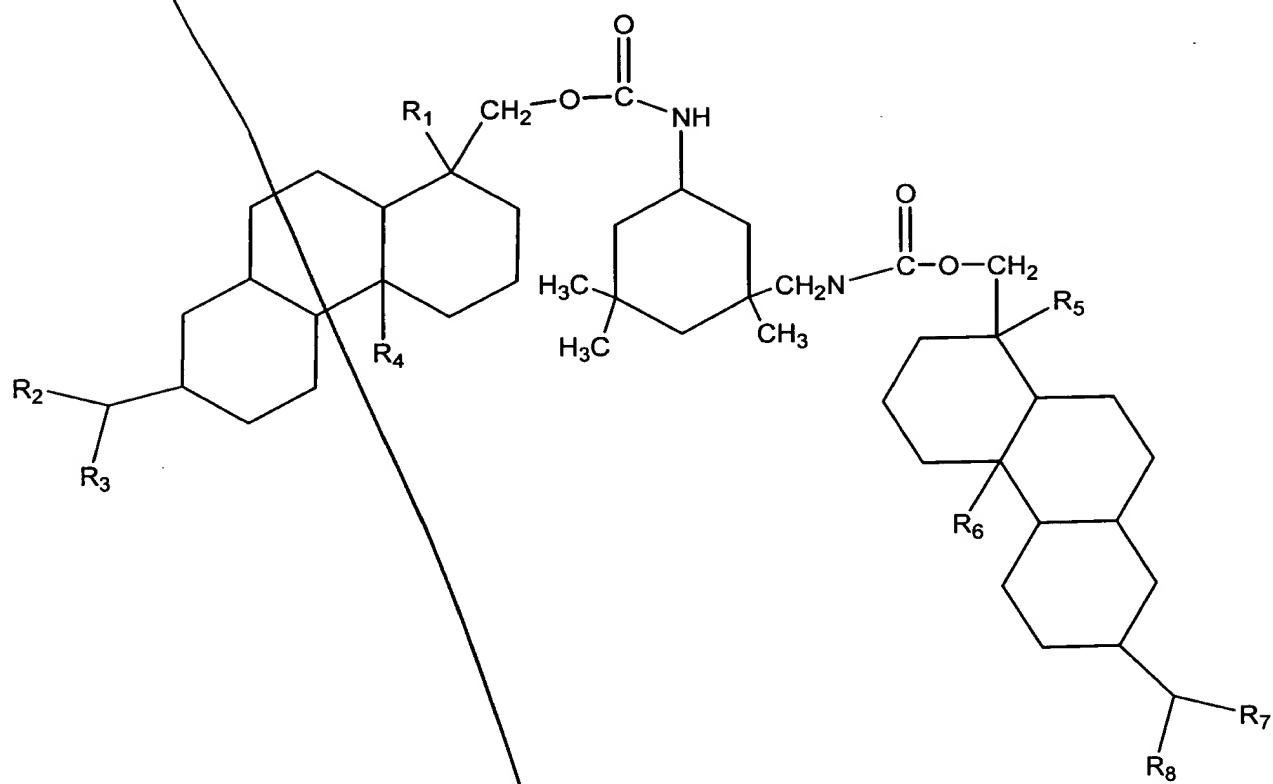
41 A phase change ink comprising:



wherein R₁-R₃₀ comprise hydrogen, alkyl groups or aryl groups, and can be the same as one another or different from one another; and wherein X₁, X₂ and X₃ comprise one or more 5 methylene groups and can be the same as one another or different from one another.

42. The phase change ink of claim 41 wherein at least some of R₁-R₃₀ are methyl groups and some of R₁-R₃₀ are not methyl groups, and wherein at least some of the R₁-R₃₀ 10 which are not methyl groups are hydrogen.

43. A phase change ink comprising:



wherein R₁, R₂, R₃, R₄, R₅, R₆, R₇ and R₈ comprise hydrogen, alkyl groups or aryl groups.

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44. The phase change ink of claim 43 wherein R₁, R₂, R₃, R₄, R₅, R₆, R₇ and R₈ are methyl groups.